

CLAIMS

1. An electric steering lock for locking and unlocking a steering shaft having a socket, the electric
5 steering lock comprising:

a steering lock mechanism including:

a latch member movable to be engaged with and disengaged from the socket in the steering shaft;
and

10 a drive means for driving the latch member, the steering lock mechanism being shiftable between a plurality of operation states including a lock state in which the latch member is engaged with the socket and an unlock state in which the
15 latch member is disengaged from the socket;

a detection means for detecting at least one of the operation states, including the lock state and the unlock state, of the steering lock mechanism and for outputting a detection signal when shifting to the at
20 least one of the operation states is completed; and

a state holding means, connected to the detection means, for generating a hold signal held at a voltage that is the same as that of the detection signal and for outputting a completion signal indicating that shifting
25 to the at least one of the operation states has been completed in accordance with at least one of the detection signal, provided from the detection means, and the hold signal.

30 2. The electric steering lock according to claim 1, wherein:

the detection means outputs an unlock detection signal when the steering lock mechanism detects the unlock state; and

the state holding means holds the hold signal at a voltage corresponding to the unlock signal and outputs an unlock completion signal when at least one of the hold signal and the unlock detection signal has the
5 voltage indicating the unlock state.

3. The electric steering lock according to claim 1 or 2, further comprising:

a control means, connected to the detection means
10 and the state holding means, for determining whether or not shifting to the at least one of the operation states has been completed based on the detection signal, the control means providing a state hold command to the state holding means in response to the detection signal,
15 wherein the state holding means holds the detection signal in response to the state hold command to output a hold signal corresponding to the voltage of the held detection signal.

20 4. The electric steering lock according to any of claims 1 to 3, wherein the state holding means includes:

a hold circuit for holding the detection signal provided from the detection means and outputting a hold
25 signal having a voltage that is the same as that of the held detection signal; and

an OR circuit, connected to the detection means and the hold circuit, for outputting an H level signal when at least one of the hold signal and the detection signal
30 has an H level.

5. The electric steering lock according to claim 4, wherein the hold circuit is a flip-flop.

6. The electric steering lock according to claim 4, wherein the hold circuit is a booster circuit.

7. An electric steering lock for connection to a battery for power supply for locking and unlocking a steering shaft, the electric steering lock comprising:
a latch member movable between a lock position at which the latch member is engaged with the steering shaft and an unlock position at which the latch member is disengaged from the steering shaft;
a drive means for driving the latch member;
a non-contact unlock sensor powered by the battery, the non-contact unlock sensor being activated to output an unlock detection signal when the latch member is in the unlock position;
a hold circuit, connected to the unlock sensor, for outputting a hold signal corresponding to the unlock detection signal; and
an OR circuit, connected to the unlock sensor and the hold circuit, for outputting an unlock completion signal when at least one of the unlock signal and the hold signal has a predetermined level.

8. The electric steering lock according to claim 7 further comprising:

a control circuit, connected to the unlock sensor and the hold circuit, for controlling the hold circuit, the control circuit providing a state hold command to the hold circuit in response to the unlock detection signal, wherein the hold circuit holds the unlock detection signal in response to the state hold command and continuously outputs a hold signal corresponding to the held unlock detection signal.

9. The electric steering lock according to claim 8, wherein the OR circuit continuously outputs the unlock completion signal when at least one of the unlock signal and the hold signal has a predetermined level.